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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,239	02/27/2004	Tomokazu Yuasa	088485-0241	7975

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EXAMINER	
JACKSON, BLANE J	
ART UNIT	**PAPER NUMBER**
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/789,239	YUASA, TOMOKAZU	
	Examiner	Art Unit	
	Blane J. Jackson	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-21 and 23-27* is/are rejected.

7)☒ Claim(s) *10 and 22* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 february 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 6, 13-15, 16, 18 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanuki (US 2002/0039424) in view of Nelson et al. (US 6,018,232).

As to claims 1, 13 and 25, Watanuki teaches a system and electronic apparatus which can be powered by a battery and is configured to perform radio communications with another apparatus (figures 1A-1D; audio player and figures 2A-3B: headphone or headset with Bluetooth connection, paragraphs 0027-0034), comprising:

A battery capacity detection means for detecting a remaining capacity of the battery (figure 10, headset (20) includes battery (55) and battery level detector (56), paragraph 0087),

A radio signal transmission means for transmitting a radio signal at one of a first output level and a second output level lower than the first output level (figure 10, digital data modulating device (46), that would output less power with weakening battery power),

Control means for *outputting a warning sound* when the remaining capacity of the battery detected by the battery capacity detection means becomes lower than a predetermined value (paragraph 0087).

Watanuki does not teach a control means for switching the output level of the radio signal transmitted by the radio signal transmission means from the first output level to the second level when the remaining capacity of the battery detected becomes lower than a predetermined value.

Nelson teaches a method of operating battery powered wireless devices where a monitored drop in the output voltage from the battery, the device power supply, signals a microcontroller (112) to reduce the transmit power amplifier (102) power level setting over the full discharge cycle of the battery, figure 5, column 11, lines 26-45. Nelson teaches this power adjustment results in a reduction in output power but provides for the power amplifier to properly operate over the full discharge cycle of the battery, column 11, line 46 to column 12, line 24.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further utilize the battery level detection method in the wireless device of Watanuki to control the wireless transmit power as taught by Nelson to extend the life of the battery and provide transmission over the entire battery discharge curve.

As to claims 2 and 14, Nelson of Watanuki modified teaches the electronic apparatus according to claims 1 and 13 further comprising setting means for controlling whether or not the output level is switched based on the remaining capacity of the

battery (figure 5, column 11, lines 39-45, microcontroller (112) determines the feedback power out level reference per the monitored battery voltage level).

As to claim 3 and 15, Watanuki teaches the electronic apparatus according to claims 2 and 14 wherein said control means includes means for outputting a warning sound when the control means detects that the remaining capacity of the battery becomes lower than the predetermined value in a state where the setting means is so set that the output level is not switched in accordance with the remaining capacity of the battery (paragraph 0087, the battery level detector (56) of the headset (20) outputs a warning sound generating command to a warning sound generator (57) when the battery residue is below *a predetermined value* inherently before a reduction in system performance).

As to claims 4 and 16 with respect to claims 1 and 14, Watanuki teaches the electronic apparatus wherein said radio signal transmission means performs radio communications conformable to Bluetooth standards (paragraph 0031).

As to claims 6 and 18 with respect to claims 1 and 13, Watanuki teaches the electronic apparatus wherein said electronic apparatus further comprises a headset (figure 3B, a speaker and microphone assembly worn on the head (or ear) comprises a headset as opposed to a headphone).

Claims 5 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanuki (US 2002/0039424) and Nelson et al. (US 6,018,232) and further in view of Schmandt (US 2005/0009554).

As to claims 5 and 17 with respect to claims 4 and 16, Watanuki teaches a Bluetooth connection where Nelson of Watanuki modified teaches power control as linked to the battery capacity, column 11, lines 46-60 but Watanuki modified does not teach wherein the radio signal transmission means uses class 2 when the radio signal is output at the first output level and uses class 3 when the radio signal is output at the second output level.

Schmandt teaches power control for terminals is related to power classes 1, 2 and 3 of the Bluetooth standard and power regulation to prevent disturbing effect on other transmission or other electrical equipment, paragraph 0006. Schmandt further teaches a method to establish the transmit power during setup by feedback control as prescribed in power class 1 in the Bluetooth standard with a return channel available (paragraph 0032).

It would have been obvious to one of ordinary skill in the art at the time of the invention to establish the power control method of Watanuki modified in accordance with the approach of Schmandt for compatibility in a Bluetooth network.

Claims 7-9, 11, 19-21, 23 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanuki (US 2002/0039424) in view of Nassimi (US 2004/0204155).

As to claims 7, 19 and 27, Watanuki teaches a method and electronic apparatus which can be powered by a battery and is configured to perform radio communications with another apparatus (figures 1A-1D; audio player and figures 2A-3B: headphone or headset with Bluetooth connection, paragraphs 0027-0034), comprising:

A battery capacity detection means for detecting a remaining capacity of the battery (figure 10, headset (20) includes battery (55) and battery level detector (56), paragraph 0087),

Audio data reproduction means for reproducing audio data with one of first sound quality (figure 10, receiving device (51), D/A converting/amplifying circuit (53) and Speaker (24)),

Control means for *outputting a warning sound* when the remaining capacity of the battery detected by the battery capacity detection means becomes lower than a predetermined value (paragraph 0087).

Watanuki does not teach a control means for switching the sound quality of the audio data reproduced by the audio data reproduced by the audio data reproduction means from the first sound quality to the second sound quality when the remaining capacity of the battery detected by the battery capacity detection means becomes lower than a predetermined value.

Nassimi teaches a non-rechargeable wireless headset, figure 2, with power control circuitry assists in saving energy by controlling the power flow to transmitter, receiver, power supply and other associated circuitry, paragraphs 0038-0043. Nassimi

further teaches the power control circuitry may operate automatically to turn on and off or to mute the receiver, paragraph 0044.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Watanuki with the power control circuitry of Nassimi to increase battery life as regards receiver and audio control.

As to claims 8 and 20, Nassimi of Watanuki modified teaches the electronic apparatus according to claims 7 and 19 further comprising setting means for controlling whether or not the sound quality is switched based on the remaining capacity of the battery (paragraph 0048, power control circuitry may act to automatically control volume of the audio output from the earpiece speaker such that sound quality may be enhanced).

As to claims 9 and 21, Watanuki teaches the electronic apparatus according to claims 8 and 20 wherein said control means includes means for outputting a warning sound when the control means detects that the remaining capacity of the battery becomes lower than the predetermined value in a state where the setting means is so set that the sound quality is not switched in accordance with the remaining capacity of the battery (paragraph 0087, the battery level detector (56) of the headset (20) outputs a warning sound generating command to a warning sound generator (57) when the battery residue is below *a predetermined value,* inherently before a reduction in system performance).

As to claims 11 and 23, Watanuki teaches the electronic apparatus according to claims 7 and 23 wherein said electronic apparatus further comprises a headset (figure 3B, a speaker and microphone assembly worn on the head (or ear) comprises a headset as opposed to a headphone).

Claims 12, 24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanuki (US 2002/0039424) in view of Nelson et al. (US 6,018,232) and Nassimi (US 2004/0204155).

As to claims 12 and 24, Watanuki teaches a system and electronic apparatus which can be powered by a battery and is configured to perform radio communications with another apparatus (figures 1A-1D; audio player and figures 2A-3B: headphone or headset with Bluetooth connection, paragraphs 0027-0034), comprising:

A battery capacity detection means for detecting a remaining capacity of the battery (figure 10, headset (20) includes battery (55) and battery level detector (56), paragraph 0087),

A radio signal transmission means for transmitting a radio signal at one of a first output level and a second output level lower than the first output level (figure 10, digital data modulating device (46), that would output less power with weakening battery power),

Audio data reproduction means for reproducing audio data with one of first sound quality (figure 10, receiving device (51), D/A converting/amplifying circuit (53) and Speaker (24)),

Control means for *outputting a warning sound* when the remaining capacity of the battery detected by the battery capacity detection means becomes lower than a predetermined value (paragraph 0087).

Watanuki does not teach a control means for switching the output level of the radio signal transmitted by the radio signal transmission means from the first output level to the second level when the remaining capacity of the battery detected becomes lower than a predetermined value.

Nelson teaches a method of operating battery powered wireless devices where a monitored drop in the output voltage from the battery, the device power supply, signals a microcontroller (112) to reduce the transmit power amplifier (102) power level setting over the full discharge cycle of the battery, figure 5, column 11, lines 26-45. Nelson teaches this power adjustment results in a reduction in output power but provides for the power amplifier to properly operate over the full discharge cycle of the battery, column 11, line 46 to column 12, line 24.

Nelson also teaches independent setting means for controlling whether or not the output level is switched based on the remaining capacity of the battery (figure 5, column 11, lines 39-45, microcontroller (112) determines the feedback power out level reference per the monitored battery voltage level).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further utilize the battery level detection method in the wireless device of Watanuki to control the wireless transmit power as taught by Nelson to extend the life of the battery and provide transmission over the entire battery discharge curve.

Watanuki modified does not teach a control means for switching the sound quality of the audio data reproduced by the audio data reproduced by the audio data reproduction means from the first sound quality to the second sound quality when the remaining capacity of the battery detected by the battery capacity detection means becomes lower than a predetermined value.

Nassimi teaches a non-rechargeable wireless headset, figure 2, with power control circuitry assists in saving energy by controlling the power flow to transmitter, receiver, power supply and other associated circuitry, paragraphs 0038-0043. Nassimi further teaches the power control circuitry may operate automatically to turn on and off or to mute the receiver, paragraph 0044.

Nassimi further teaches setting means for controlling whether or not the sound quality is switched based on the remaining capacity of the battery (paragraph 0048, power control circuitry may act to automatically control volume of the audio output from the earpiece speaker such that sound quality may be enhanced).

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Watanuki modified with the power control circuitry of Nassimi to increase battery life as regards receiver and audio control.

As to claim 26 with respect to claim 25, Watanuki modified teaches wherein the control method as recited in claim 25 comprises an audio data reproduction device for reproducing audio data with one of first sound quality (figure 10, receiving device (51), D/A converting/amplifying circuit (53) and Speaker (24)),

detecting a remaining capacity of the battery (figure 10, headset (20) includes battery (55) and battery level detector (56), paragraph 0087),

Watanuki teaches *outputting a warning sound* when the remaining capacity of the battery detected by the battery capacity detection means becomes lower than a predetermined value (paragraph 0087) but does not teach switching the sound quality of the audio data reproduced by the audio data reproduced by the audio data reproduction device from the first sound quality to the second sound quality when the remaining capacity of the battery detected by the battery capacity detection means becomes lower than a predetermined value.

Nassimi teaches a non-rechargeable wireless headset, figure 2, with power control circuitry assists in saving energy by controlling the power flow to transmitter, receiver, power supply and other associated circuitry, paragraphs 0038-0043. Nassimi further teaches the power control circuitry may operate automatically to turn on and off or to mute the receiver, paragraph 0044.

It would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Watanuki with the power control circuitry of Nassimi to increase battery life as regards receiver and audio control.

Allowable Subject Matter

Claims 10 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon but considered pertinent to applicant's disclosure includes: Liu (US 2004/0176065), Johnson et al. (US 5,237,257), Rusch (US 6,801,777), Jordan et al. (US 6,387,061), Son et al. (US 2001/0016506), Agrawal et al. (US 6,072,784), Hurwitz et al. (US 2003/0236890).

Of particular relevance to the invention but predated by the applicant's effective filling date is Lilja et al. (US 2005/0090211) which discloses terminal equipment arranged for power control according to the Bluetooth power class and Gunn et al. (US 2005/0286713) discloses handset sound enhancing algorithms selected to conserve power in the headset based on a low battery indication signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blane J. Jackson whose telephone number is (571) 272-7890. The examiner can normally be reached on Monday through Friday, 9:00 AM-6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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